HANFORD TANK FARMS 2003 ACCOMPLISHMENTS

A new direction in FY 2003:

Driving closure forward

The Integrated Mission Acceleration Plan is signed by Ed Aromi, president and general manager of CH2M HILL Hanford Group, as Roy Schepens, manager of the Department of Energy Office of River Protection, looks on.

Office of River Protection

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Integrated Safety Management remained the top priority

Safety remained at the forefront of CH2M HILL activities throughout fiscal year 2003, as the company continued a number of actions in concert with employees to improve worker safety. These activities included the following:

- Launching a company-wide Safety Improvements Initiative, following a sweeping reorganization, to deal with safety issues at all levels
- Adding a new lead safety representative for bargaining unit-workers. This gives the company a total of four full-time safety representatives whose job it is to support the bargaining-unit workers in resolving safety issues
- Developing a revised segment of the Hazardous Waste Operations and Emergency Response (HAZWOPER) training, with specific information about tank chemical and vapor hazards and controls
- Increasing employee involvement in seeking solutions to vapor-exposure problems, and implementing employee suggestions for field improvements to reduce vapors
- Initiating a safety improvement pilot project within each Employee Accident Prevention Council and reshaping the safety councils after corporate reorganization
- Implementing improvements and upgrades to the industrial hygiene and medical support programs.

Continuous improvement seen in safe nuclear operations

DOCUMENTED SAFETY ANALYSIS
DSA
IMPLEMENTATION PROJECT

A new safety basis entered the lexicon of the Office of River Protection in FY 2003. Known as the Tank Farms Documented Safety Analysis, or DSA, it replaces the Final Safety Analysis Report (FSAR) that had governed activities in the tank farms since 1999. The change from FSAR to DSA is a DOE complex-wide initiative started several years ago. Activities are now conducted in accordance with the requirements of the DSA and DSA-based Technical Safety Requirements (TSR). This ensures that there is a single safety basis for all tank-farm activities. The implementation of the DSA in early FY 2004 culminated the efforts of hundreds of CH2M HILL employees over the past year, and it was implemented in a deliberate and controlled fashion.

Even though the DSA changes the number of controls that were included in the FSAR, the DSA still provides conservative protection of the public, facility workers and the environment. Safety management programs such as Radiation Protection, Industrial Hygiene, Environmental Management and others are focused on the safety of the worker and are under the umbrella of the Integrated Safety Management System, providing the basis for how we "Do Work Safely" in the tank farms. Under the DSA, these programs have a much larger role, providing additional assurance of a safe work environment.

Disciplined conduct of operations was maintained

CH2M HILL will be retrieving, processing and transferring waste from Hanford's underground radioactive waste storage tanks for many years to come. This will require disciplined conduct of operations consistent with the best commercial nuclear operations, and we are making significant strides.

The number of occurrence reports is down by more than 40 percent from a year ago. There were none related to lock-out, tag-out events. And Technical Safety Requirement (TSR) violations caused by poor conduct of operations are down by more than 80 percent compared to last year.

Our Event Free Clock program measures significant events caused by human error. This was one significant area of focus, along with TSR compliance, implementation of new accountability tools and a new corrective action program. Our FY 2003 goal of 15 days between events is a 50 percent improvement over a year ago.

The corrective action backlog has been reduced by more than 50 percent as well, and delinquent corrective actions have been consistently under 5 percent. Corrective maintenance backlogs have been reduced by more than 30 percent.

Significant progress was made in producing higher-quality work documents and a more effective work control process. A new schedule integrates all projects and operational activities, and has allowed us to increase the number of transfers and evaporator campaigns.

CH2M HILL is proud of these accomplishments, but not satisfied. We will continue to set aggressive goals and continue to measure our performance against the best nuclear operators.

Employee Response Team developed

The Employee Response Team (ERT) was started as the fiscal year began.

Team members are available to meet with any employee at any time to discuss any issue, and they serve as ombudsmen on worker issues.

The team was established to add another dimension to CH2M HILL's ability to address employee issues and to enhance the safety culture. This program was so successful that it was expanded to four members as the fiscal year was winding down.

ERT members represent Human Resources, the Employee Concerns Program, Labor Relations and Legal.

A new direction in FY 2003:

Driving closure forward

Fiscal year 2003 may be remembered as the year CH2M HILL Hanford Group set out in a bold new direction. For the first time in Hanford's history, major steps were taken to clean up and close Hanford's radioactive waste storage tanks.

In a few words, the year saw the following changes:

- **New workscope that included beginning to close waste tanks**
- **A plan for achieving tank-closure goals and a new work schedule for accomplishing those goals by specific dates**
- **Realignment of the workforce to match employee talents with the needed skills**
- **A major reorganization of the company, and many streamlining actions designed to turn the seemingly impossible into practical, "doable" tasks.**

A number of key projects delivered early and under budget demonstrated this new focus on accelerated cleanup and closure:

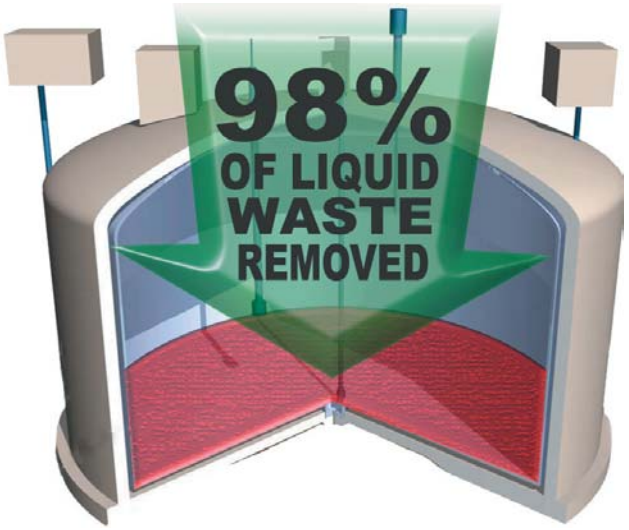
- A milestone to remove 98 percent of the pumpable liquid wastes from 29 single-shell storage tanks was met nearly a month before the deadline.
- Interim stabilization was completed on 20 waste tanks.
- Work to prepare for moving tank waste to the area where it will be turned into glass for permanent disposal was completed early.

"We're seeing the results of the accelerated cleanup agreement we have with the State of Washington," said Roy Schepens, manager of the Department of Energy Office of River Protection.

CH2M HILL's focus on worker safety was exemplified during the year by the continuing emphasis on increasing protection from chemical exposures. Worker-led groups identified and studied the issues, and came up with solutions. These actions are part of the Integrated Safety Management approach of identifying hazards, implementing controls and making continuous improvements.

In step with our customer's needs and in cooperation with our regulators, CH2M HILL welcomed the new focus with innovation, dedication, ingenuity and a commitment to safety and quality. This is our report of what we achieved over the past year.

Interim Stabilization met milestone early



CH2M HILL and the Office of River Protection had until Sept. 30 to meet a consent-decree milestone by removing 98 percent of the pumpable liquids from the single-shell tanks. That mark was hit one month early on Aug. 31. In the process, more than 3 million gallons of waste were removed from the tanks, further reducing the threat to the environment and the Columbia River.

"The successful completion of this milestone is a testament to the dedication and commitment of the ORP and CH2M HILL workers who have accepted the responsibility for getting the job done," said Ed Aromi, CH2M HILL president and general manager.

Retrieval began in the tank farms

Tank C-106

An in-tank camera shows the remaining debris at the bottom of Tank C-106 at the end of October.

Fiscal year 2003 saw the start of retrieval on the first two tanks to be closed at Hanford. Tank C-106 is being used as a test case to see if new retrieval methods will be successful. Oxalic acid was added to help dissolve some of the solids, and then the solution was pumped out. Retrieval on Tank S-112 was begun earlier than planned, and a modified sluicing method was used to retrieve the remaining waste in that tank.

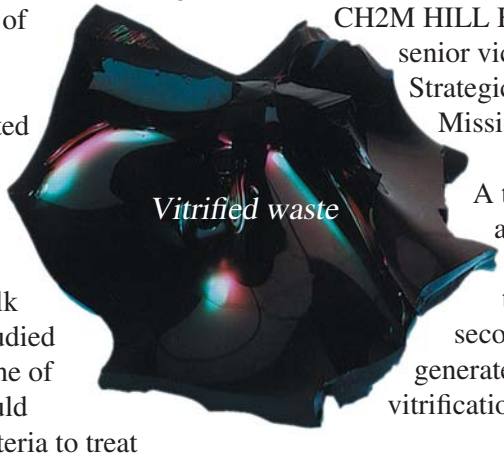
The Environmental Impact Statement data packages have been submitted. Everything is on track to have the EIS ready for public comment by next spring.

Work on Tank U-107 demonstrated that a new method would indeed be successful in waste retrieval. Workers added 10,600 gallons of dissolution water to the tank and pumped 21,332 gallons of dissolved waste out. This completed approximately 25 percent of the originally planned demonstration. After reaching that point, it was determined that the desired technical information had been obtained, and the successful demonstration was ended.

Closure activities this year were geared toward meeting all TPA milestones, and CH2M HILL saw a 30 percent increase in waste transfers as waste was moved to prepare for the retrieval activities.

Supplemental technologies were explored

CH2M HILL awarded three contracts for testing and evaluating supplemental treatment technologies for DOE's Office of River Protection. Initial testing was done with simulated waste, and CH2M HILL recommended that steam reforming and bulk vitrification be studied further to see if one of the processes would meet the strict criteria to treat some of the low-level waste currently stored in the tanks. In mid-December, it was decided to enter into negotiations with the vendor of bulk vitrification for a pilot test and demonstration facility.

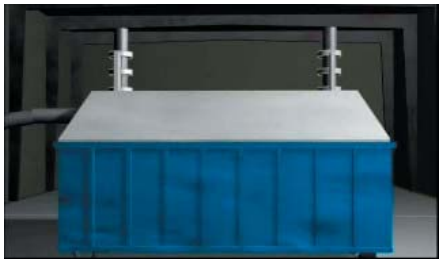

Vitrified waste

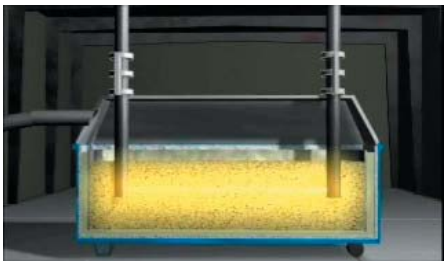
"Success in evaluating and deploying the right technologies is critical to treating all of Hanford's tank waste by 2028," said Dale Allen, CH2M HILL Hanford Group senior vice president for Strategic Planning and Mission Analysis.

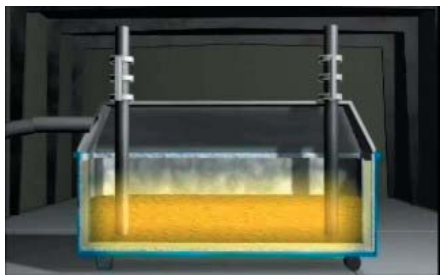
A third process known as cast stone was recommended to possibly treat secondary waste generated from the vitrification process.


A worker makes adjustments at a bulk vitrification control panel.

The bulk vitrification process.







Quality tank cleanup and closure, using innovative approaches, will cost less

CH2M HILL Hanford Group, working with the Department of Energy's Office of River Protection, has made a big dent in the estimated cost of cleaning out and closing Hanford's high-level radioactive waste storage tanks.

Through reduced management and overhead costs, and by using innovative approaches for waste retrieval and tank closure, we have shortened the closure time by at least three years, shaving $6.5 billion off the total estimated cost.

The original date for closing the tank farms was 2035. Closure is now predicted to be finished by 2032, and the cost will be reduced by 35 percent from $18.6 billion to $12.1 billion.

The Integrated Mission Acceleration Plan is signed by Ed Aromi, president and general manager of CH2M HILL Hanford Group, as Roy Schepens, manager of the Department of Energy Office of River Protection, looks on. Key strategies in the plan include retrieving and closing single-shell and double-shell tanks and tank farms as well as providing waste feed delivery to satisfy accelerated Waste Treatment Plant processing rates.

Lab and evaporator successfully transferred

CH2M HILL assumed management of two facilities that play essential roles in the safe storage and disposal of Hanford's high-level waste, as well as in the closure of the site's 177 underground high-level waste storage tanks.

The 222-S Laboratory provides analytical services that give us a better understanding of tank waste chemistry. It also supports waste removal options and treatability requirements when the waste is prepared to be sent to the Waste Treatment Plant, now under construction. The laboratory was transferred to CH2M HILL to achieve operating and management efficiencies. CH2M HILL is the laboratory's primary customer, and meeting our TPA milestones requires extensive use of the laboratory in support of retrieval of single-shell tank waste and double-shell-tank space management. The laboratory has reliably supported CH2M HILL in meeting all milestones necessary to achieve cleanup commitments.

The 242-A Evaporator is a state-of-the-art facility that reduces tank waste volume by driving off water and other liquids from tank waste. For the first time in its history, the evaporator completed five campaigns of near-flawless operation during the past fiscal year, reducing the volume of high-level radioactive liquid waste by more than 1.5 million gallons. This helps avoid the cost of building expensive high-level waste storage tanks that would add to the cleanup challenge.

The 222-S Laboratory in Hanford's 200 West Area.

An operator performs work with manipulators inside a hot cell at the 222-S Laboratory.

Tank waste chemistry is analyzed a the 222-S Lab.

The 242-A Evaporator.

Modernization ensured safe waste management

Upgrades have been made to infrastructure components of Hanford's high-level waste tank storage system to ensure they will continue to protect workers and the environment.

CH2M HILL is moving forward with cleaning and closing Hanford's underground waste storage tanks as it moves waste from single-shell tanks into safer double-shell tanks, where it will remain until it can be retrieved for disposal.

Ventilation systems on two of Hanford's double-shell tank farms have been upgraded to ensure they will continue to protect workers and the environment. The existing exhaust systems were nearing the end of their design life and would not have been able to meet appropriate environmental requirements.

Upgrades were also made to nine underground pits that serve a variety of functions. Some pits are points where pipes from underground tanks are interconnected for waste transfers. Others are drain pits and pump pits. All are essential components in safe waste storage and disposal. The pits were decontaminated and coated with an impermeable paint to prevent leaks from escaping the pits. Unnecessary equipment was removed and new drain seals were installed, along with new leak detectors.

A typical tank pit before modernization.

A tank pit after modernization.

244-AR Vault emptied six weeks early

CH2M HILL crews pumped approximately 19,000 gallons of radioactive and hazardous waste from the 244-AR Vault as the facility was interim-stabilized six weeks ahead of schedule and beat a Sept. 30 milestone.

Constructed between 1966 and 1968, the 100-foot-long, concrete-walled 244-AR Vault was used until the early 1990s to ensure safe waste transfers between Hanford facilities that processed irradiated nuclear fuel and the tanks that stored that waste.

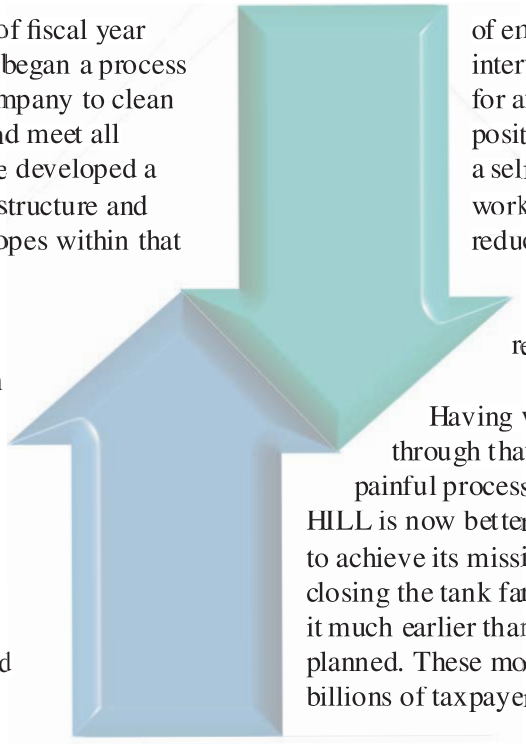
"By completing projects like this early, we can shift our resources to other work in Hanford's tank farms, such as retrieval of salt and sludge wastes form single-shell tanks," said Roy Schepens, manager of the DOE Office of River Protection.

Workers prepare to remove liquid waste from the 244-AR Vault to interim-stabilize the facility.

Realignment streamlined the organization

At the beginning of fiscal year 2003, CH2M HILL began a process of realigning the company to clean up the tank farms and meet all TPA milestones. We developed a new organizational structure and redefined the job scopes within that structure.

An extensive effort was also undertaken to realign the workforce to match the new structure. The Mission Alignment Process (MAP) was a long and difficult process that included a large percentage of employees interviewing for affected positions, plus a self-selection workforce-reduction process and some involuntary reductions.



Having worked through that somewhat painful process, CH2M HILL is now better positioned to achieve its mission of safely closing the tank farms, and to do it much earlier than originally planned. These moves will save billions of taxpayer dollars.

Work management streamlining paid off

Work within the high-level waste program is moving faster and more smoothly as a result of efforts to streamline the development and approval of the documents needed to perform work safely, commonly called work packages. First to see the change were engineers, planners and quality-assurance staff members who are responsible for planning, which always precedes work performance. Next to benefit were the fieldwork supervisors, followed by the workforce that makes it happen every day.

Not only does the paperwork move more smoothly, but there is less of it. Having fewer redundant elements in each work package, coupled with measuring the types of errors in each package, has resulted in fewer errors and has contributed to performing work more efficiently.

New planning process and schedule were adopted

Setting the tone for the year's accomplishments was the Integrated Mission Execution Schedule, or IMES, which resulted from a planning process and document called the Integrated Mission Acceleration Plan (IMAP).

Senior managers agreed to support the IMES, committing their organizations to the company's new direction. "Executing this schedule requires that we change the way we do business," said company President and General Manager Ed Aromi.

"Executing this schedule requires that we change the way we do business."

President and General Manager Ed Aromi.

Retrieval of single-shell tank C-106 neared completion

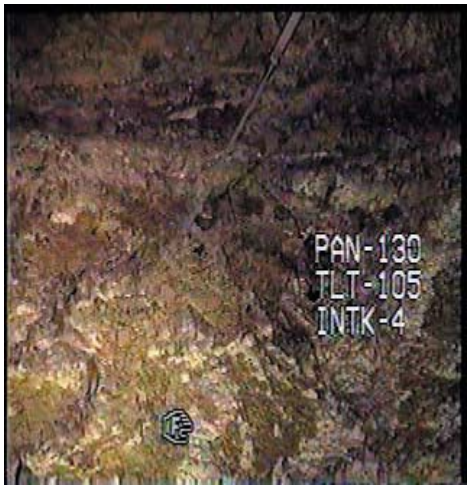
At the end of December 2003, CH2M HILL was very close to completing the retrieval of single-shell Tank C-106, one of the oldest waste tanks at Hanford and the first to be emptied of waste. The pioneering work to remove waste from this tank has in uenced ongoing tank retrievals and will determine some of the methods used in the tank cleanups that lie ahead.

Built in 1943, Tank C-106 was once on a congressional watch list of "problem" tanks. After a misrouted transfer of strontium waste from the B Plant processing facility in the 1970s, the waste inside C-106 became so hot it boiled. The heat problem was solved in the late 1990s with the transfer of 186,000 gallons of waste, containing about 4.4 million curies of radioactivity, to another tank. The original cost to remove the heat-bearing sludge was around $100 million.

Removal of the "hard heel" of waste from C-106 was a first-of-its-kind challenge and began in earnest with the removal of a heel jet pump early in 2003. The 50-year-old pump, corroded from years of heating and cooling cycles and the high humidity in the tank, was stuck in place. Removal operations included the use of mechanical wedges, hydraulic jacks and a crane. On April 1, 2003, 18,000 gallons of liquid waste were transferred from C-106 into double-shell Tank AY-102.

In August, CH2M HILL initiated waste dissolution and retrieval using oxalic acid. To increase the sluicing effectiveness, a second sluice nozzle was installed in November. Through six repetitive acid campaigns and four sluicing campaigns, more than 12,000 gallons of solid waste were removed and transferred to the double-shell tank system.

The removal of the C-106 "hard-heel" has been completed at an approximate cost of $20 million. With the addition of the last batch of oxalic acid to dissolve the remaining waste and the subsequent sluicing campaign, CH2M HILL will remove the last of the recoverable waste in the tank.



Half of waste retrieved from S-112

Taking the plans and test results of experimental-scale dissolution of saltcake to the real-life scale of single-shell Tank S-112 presented challenges for waste retrieval. Nevertheless, by year's end, CH2M HILL had retrieved 50 percent of the waste in Tank S-112.

Original retrieval plans were modified to accomplish the shortened schedule and included using larger volumes of water to dissolve the waste and higher-capacity pumps to remove the dissolved waste from S-112.

Transfer piping to vit plant completed

CH2M HILL completed the last of the piping connecting Hanford's underground waste storage tanks with the site of the Waste Treatment Plant, where the waste will be turned into glass for disposal. The work was completed more than two months ahead of schedule.

The pipeline is an important part of the Department of Energy's program to dispose of the waste currently stored in Hanford's 177 underground radioactive waste storage tanks. The tanks contain approximately 53 million gallons of radioactive and hazardous waste from decades of defense production.

The project installed three waste transfer lines — 6,600 feet of double-walled piping — to ensure protection of the environment.

Community benefited from company's presence

Community commitment is one of CH2M HILL's Core Values. In 2003, CH2M HILL continued to participate in the civic lives of our communities and maintained active support of several community-based organizations.

CH2M HILL continued its support of higher education through a $2 million grant that it pledged to Washington State University Tri-Cities in 2001. This endowment has been used to increase the size of the university's computer science facility by 50 percent.

Company employees contributed more than a quarter of a million dollars to the United Way. A company vice president helped lead the Pacesetter campaign for all Hanford contractors. Our employees also raised money for such deserving causes as the March of Dimes and the American Diabetes Association, and conducted blood drives to assist the American Red Cross.

For several years, one CH2M HILL employee has pulled together community resources and coordinated an annual "Partners 'n Pals" day for disabled children to enjoy a day of horseback riding and outdoor activities on her own property.

Employees volunteered as Junior Achievement consultants, teaching school children about business and economics in a fun way that the kids really enjoy. They also participated in community-wide fund-raising activities for Junior Achievement.

In addition to community events, CH2M HILL employees volunteered their time and talents for national commemorations including Black History Month, Hispanic Heritage Month, Martin Luther King Day, Native American Heritage Month and National Disability Month. We supported our employees who are veterans in their planning and participation in Veterans Day ceremonies.

Our CH2M HILL employees are not shy when it comes to getting involved with our community. This unselfish partnership makes winners of everyone — the company, the employees and, most of all, the community.

Many procurements went to small businesses

The company's Small Business Program placed $55 million worth of contracts with small businesses in fiscal year 2003, and the continued success of the program was nationally recognized by the Department of Energy. CH2M HILL Hanford Group received DOE's Small Business Secretarial Award for showing the largest annual increase in small-business contract awards in the nationwide DOE complex.

The award was given for 2002, when the company placed nearly $60 million in Hanford contracts with small businesses. The figure represented 64.4 percent of the company's total subcontract procurements, and an 87 percent increase over small-business procurements during 2001.

It was the second small-business award CH2M HILL received from DOE in 2003. An honor bestowed in June acknowledged the company as "best-in-class" for exceeding its fiscal year 2002 small-business goals by the largest margin in the DOE complex. CH2M HILL scored 178 percent of its plan, as compared with an average of 115 percent for 31 other participating DOE organizations nationwide.

Many of the subcontractors who do business with CH2M HILL are local firms. "The company's efforts have put money back into our region through the use of small businesses to help with the Hanford cleanup," said Roy Schepens, manager of the DOE Office of River Protection.

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Ideas and suggestions may be submitted to the
CH2M HILL Hanford Group Communications Office at (509)-372-0803

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